748 Electrophysiology/Ablation

Tuesday, March 18, 1997, 10:30 a.m.–Noon
Anaheim Convention Center, Room C1

10:30

748-1 Long-Term Follow-Up After Radiofrequency Sinus Node Modification for Inappropriate Sinus Tachycardia

J.S. Shinbane, M.D. Lesh, M.M. Scheinman, K. Wood, G.T. Evans, Jr., L.A. Saxon, H. Barron, J.M. Kalman, R.J. Lee. *University of California, San Francisco, San Francisco, CA, USA*

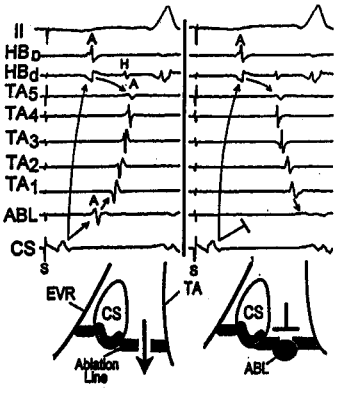
We report the long-term follow-up of 25 consecutive pts (all female, age 33 ± 8 yrs) who underwent sinus node modification (SNM) using intracardiac echo to guide placement of a 20 pole crista terminalis catheter and radiofrequency energy applications to the most superior aspect of the crista terminalis. Assessment of effect was made using matched pre and post maximal autonomic stimulation with isoproterenol (4 to 6 μcg/min) and atropine (1 mg). *Results:* SNM resulted in an increase in maximal sinus cycle length of 21 ± 24%. At follow-up (8 ± 5 mos) of 22/25 pts (3 lost to follow-up), a total of 8 have had sustained improvement of tachycardia symptoms (sx). After initial SNM, 5 had improvement of tachycardia sx and 17 had complete recurrence of tachycardia sx. A repeat EP study was performed in 7/17 pts. All 7 had maximal sinus cycle length return to baseline pre-SNM values and 6/7 underwent a repeat SNM. Improvement of tachycardia sx was achieved in 3/6, and 2/6 have had complete recurrence of tachycardia sx (1 lost to late follow-up). Permanent pacemakers have been required in 3/22 pts for junctional rhythm. *Conclusions:* Radiofrequency ablation at the superior crista terminalis can achieve initial electrophysiologic alteration of sinus node function, but there is a high rate of recurrent sx. In some cases, symptomatic cure may require complete ablation of sinus node function with resultant junctional rhythm and implantation of a pacemaker. Further studies are needed to identify the optimal extent of SNM and the cohort of pts most likely to benefit from SNM.

10:45

748-2 Identification of a Defect of Ablation Line During Radiofrequency Ablation of Atrial flutter

H. Nakagawa, D. Schleinkofer, N. Shah, F. Freihoff, K.J. Beckman, J.H. McClelland, M.D. Gonzalez, S. Imai, M. Arruda, K. Otomo, J. Calame, M. Goudeau, R. Lazzara, W.M. Jackman. *University of Oklahoma, Oklahoma City, OK, USA*

Recent studies have shown that recurrence of atrial flutter (AFL) following ablation is markedly reduced when a complete line of conduction block is produced across the subeustachian isthmus (SI), between the tricuspid annulus (TA) and the eustachian valve and ridge (EVR). Ablation within the SI may terminate AFL without producing a complete line of block across the SI. Identification of a defect in the ablation should allow creation of a complete line of block without repeating the entire ablation line. *Methods and Results:* 53 patients (pts) with AFL were studied. A complete line of block across SI was identified by pacing the proximal coronary sinus (CS) and finding atrial activation around the TA only in the counterclockwise direction with latest atrial activation just lateral to the ablation line, and by pacing the TA lateral to the ablation line and finding atrial activation around the TA only in the clockwise direction with late atrial activation in the proximal CS. Ablation was performed during AFL in 26 of the 53 pts. A complete line of block was present after termination of AFL by ablation in only 15 of the 26 pts. The defect in the ablation line was identified for success ablation, by CS pacing and finding earliest atrial activation just posterior to the ablation line (Fig.).



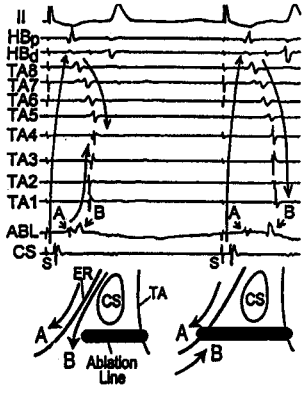
In 27 of the 53 pts, ablation was performed during CS pacing and defects in the ablation line were identified by finding sties of earliest atrial activation. A complete line of block across SI was obtained in all 53 pts with 8 ± 6 RF applications. AFL recurred in only 1/53 pts. *Conclusion:* Defects in a SI ablation line can be identified by finding earliest atrial activation just posterior to the ablation line during CS pacing.

11:00

748-3 Linear Ablation from Tricuspid Annulus to Eustachian Valve and Ridge is Adequate for Patients with Atrial Flutter: Extending Ablation Line to the Inferior Vena Cava is Not Necessary

H. Nakagawa, S. Imai, D. Schleinkofer, M. Holden, K.J. Beckman, J.H. McClelland, M. Arruda, M.D. Gonzalez, L.E. Widman, K. Otomo, J. Calame, M. Goudeau, R. Lazzara, W.M. Jackman. *Univ. of Oklahoma, Oklahoma City, OK, USA*

Recent studies show that the eustachian valve and ridge (ER) forms a line of conduction block extending from the inferior vena cava (IVC) to just posterior, or to the coronary sinus ostium (CS). Therefore, creating a line of block between the tricuspid annulus (TA) and ER should eliminate typical atrial flutter (AFL) without extending the ablation line to the IVC. *Results:* Ablation just between TA and ER was attempted in 16 of the 65 patients (pts) undergoing AFL ablation. A completion of ablation line was verified by the proximal CS pacing that produced atrial activation sequence around the TA only in the counterclockwise direction and by pacing the posterior TA with only clockwise atrial activation. Ablation was performed during AFL in 6 pts and during CS pacing in 10 pts, using a custom radiofrequency (RF) filter which allows recording of electrograms from the ablation electrode during RF application. Beginning at TA, the ablation electrode was moved towards ER in 2–3 mm increments every 30 sec, usually after the development of an injury potential on the unfiltered unipolar recording. Double atrial potentials (A-A = 38 ± 21 msec) were recorded on reaching ER and RF resulted in an abrupt delay in the second potential (A-A = 118 ± 31 msec) with the completion of the line of block (Fig.). A complete line of block was obtained in all 16 pts (1–16 RF applications) without extending ablation to the IVC. AFL has not recurred in any pt (follow-up 1–5 months).



Conclusions: Ablation between TA and ER produces complete conduction block across the subeustachian isthmus, and eliminates AFL without extending ablation line to the IVC.

11:15

748-4 A Case Control Study of Mortality After Radiofrequency Ablation of the AV Junction

B. Ozin, J. Mackall, G. Van Hare, M. Carlson, D. Rosenbaum, A.L. Waldo, L. Biblo. *University Hospitals of Cleveland, Case Western Reserve University, Cleveland, Ohio, USA*

Catheter ablation of the AV junction with pacemaker implantation achieves control of the ventricular rate in patients with atrial fibrillation resistant to or intolerant of pharmacologic therapy. Earlier multi-center reports on DC energy ablation suggested an increased risk for sudden death in patients undergoing this procedure. Limited data are available on the long-term effects of radiofrequency catheter ablation of the AV junction on mortality. We compared the outcome of 88 consecutive patients who underwent radiofrequency ablation of the AV junction in our center between 4/91 and 3/96 with a similar control group of patients with atrial fibrillation who underwent only electrical cardioversion. The groups were similar with respect to age, sex,